We claim:-

1. A graft polyol having a bimodal particle size distribution and a total solids content of from 5 to 65% by weight, containing small particles having a particle diameter of from 0.05 to 0.7 μm and large particles having a particle diameter of 0.4 to 5.0 μm, the peaks of the large and small particles measured by the Fraunhofer diffraction method in combination with polarization intensity differential scattering not overlapping, and a total content of the solids having the defined particle sizes consisting of a volume fraction of from 5 to 45% of small particles and a volume fraction of from 95 to 55% of large particles, these volume fractions summing to 100%.

2. A graft polyol as claimed in claim 1, which contains small particles, which are characterized by a peak which begins in a range of from 0.05 to 0.08 μm and ends in a range of from 0.4 to 0.7 μm and large particles which are characterized by a peak which begins in a range of from 0.4 to 1.0 μm and ends in a range of from 1.2 to 5.0 μm, measured in each case by the Fraunhofer diffraction method in combination with polarization intensity differential scattering, the measured peaks not overlapping.

3. A graft polyol as claimed in claim 1 or 2, which has a viscosity at 25°C which is at least 5% lower than a graft polyol having a monomodal particle size distribution and exclusively small or large particles, assuming that the graft polyols to be compared do not differ in solids content and in the starting materials.

4. A graft polyol as claimed in any of claims 1 to 3, wherein the small particles have a diameter of from 0.1 to 0.5 μm and the large particles have a diameter of from 0.5 to 4.0 μm.

5. A graft polyol as claimed in any of claims 1 to 4, wherein the total solids content of the graft polyol is from 10 to 50% by weight.

6. A graft polyol as claimed in any of claims 1 to 5, wherein the total content of the solids having the defined particle sizes consists of a volume fraction of from 10 to 40% by weight of small particles and a volume fraction of from 90 to

Fig.

60% by weight of large particles, these volume fractions summing to 100%.

7. A process for the preparation of graft polyols having a bimodal particle size distribution as claimed in claim 1, wherein at least one graft polyol having a monomodal particle size distribution with small particles which have a diameter of from 0.05 to 0.7 μm and at least one graft polyol having a monomodal particle size distribution with large particles which have a diameter of from 0.4 to 5.0 μm are mixed with one another in a ratio such that the total solids content of the resulting graft polyol having a bimodal particle size distribution consists of a volume fraction of from 5 to 45% of small particles and a volume fraction of from 95 to 55% of large particles, the volume fractions summing to 100%.

8. A process as claimed in claim 7, wherein the graft polyol having a monomodal particle size distribution with small particles which is used is one having a particle diameter of from 0.1 to 0.5 μm.

9. A process as claimed in claim 7 or 8, wherein the graft polyol having a monomodal particle size distribution of large particles which is used is one having a particle diameter of from 0.5 to 4.0 μm

10. A process as claimed in any of claims 7 to 9, wherein the graft polyol having a monomodal particle size distribution with small particles is used in a volume fraction of from 10 to 40% and the graft polyol having a monomodal particle size distribution of large particles is used in a volume fraction of from 90 to 60%, these volume fractions summing to 100%.

11. A process for the preparation of a graft polyol having a bimodal particle size distribution as claimed in claim 1 in a semibatch process, wherein the initially taken reaction mixture contains in each case at least one carrier polyol, a macromer and a graft polyol having a monomodal particle size distribution, more than 3% by weight of the solids content in the resulting graft polyol consisting of the solids content of the graft polyol used in the initially taken reaction mixture and having a monomodal particle size distribution, and the weight of the macromer used in the initially taken reaction mixture is from 1 to 30% by weight, based on the total weight of the ethylenically unsaturated monomers used,

which is at least sufficiently large that small particles are formed in the further course of the reaction.

12. A process as claimed in claim 11, wherein the amount of macromer used in the initially taken reaction mixture is from 2 to 15% by weight, based on the amount of the ethylenically unsaturated monomers used for the resulting graft polyol.

13. A process as claimed in claim 11 or 12, wherein the macromer is a polyol having an average molecular weight of more than 2 000 g/mol and a functionality of □2, which possesses at least one terminal, polymerizable, ethylenically unsaturated group.

14. A process as claimed in claim 13, wherein the macromer is a polyol having an average molecular weight of more than 3 000 g/mol.

15. The use of a graft polyol as claimed in any of claims 1 to 6 for the preparation of polyurethanes.

16. A process for the preparation of polyurethanes by reacting organic and/or modified organic polyisocyanates (a) with graft polyols (b) and, if required, further compounds (c) having hydrogen atoms reactive toward isocyanates, in the presence of catalysts (d), if required water and/or other blowing agents (e) and, if required, further assistants and additives (f), wherein the graft polyols (b) used are those having a bimodal particle size distribution and a total solids content of from 5 to 65% by weight, containing small particles having a diameter of from 0.05 to 0.7 μm and large particles having a diameter of from 0.4 to 5.0 μm, the peaks of the large and small particles measured by the light scattering method not overlapping, and a total content of solids having the defined particle sizes consisting of a volume fraction of from 5 to 45% of small particles and a volume fraction of from 95 to 55% of large particles, these volume fractions summing to 100%.